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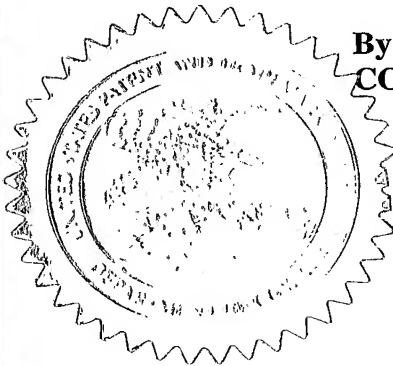
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FILING DATE.**

**APPLICATION NUMBER: 60/448,134**

**FILING DATE: February 20, 2003**

**RELATED PCT APPLICATION NUMBER: PCT/US04/04793**



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## PROVISIONAL APPLICATION FOR PATENT COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c).

Express Mail Label No.

OLD U.S. PTO  
341877/09  
02/20/03

INVENTOR(S)					
Given Name (first and middle (if any))		Family Name or Surname		Residence (City and either State or Foreign Country)	
William O.		Walters		Seattle, Wa	
<input type="checkbox"/> Additional inventors are being named on the _____ separately numbered sheets attached hereto					
TITLE OF THE INVENTION (500 characters max)					
DEVICE TO CATCH AND RETRIEVE FOAM PELLETS					
Direct all correspondence to: CORRESPONDENCE ADDRESS					
<input type="checkbox"/> Customer Number _____ OR <input type="checkbox"/> Firm or Individual Name _____		Type Customer Number here		Place Customer Number Bar Code Label here	
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ENCLOSED APPLICATION PARTS (check all that apply)					
<input checked="" type="checkbox"/> Specification Number of Pages _____		<input type="checkbox"/> CD(s), Number _____			
<input checked="" type="checkbox"/> Drawing(s) Number of Sheets _____		<input type="checkbox"/> Other (specify) _____			
<input type="checkbox"/> Application Data Sheet, See 37 CFR 1.76					
METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT					
<input checked="" type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27.				FILING FEE AMOUNT (\$)	
<input type="checkbox"/> A check or money order is enclosed to cover the filing fees.				80.00	
<input type="checkbox"/> The Commissioner is hereby authorized to charge filing fees or credit any overpayment to Deposit Account Number: _____					
<input type="checkbox"/> Payment by credit card, Form PTO-2038 is attached.					
The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.					
<input checked="" type="checkbox"/> No.					
<input type="checkbox"/> Yes, the name of the U.S. Government agency and the Government contract number are: _____					

Respectfully submitted,

SIGNATURE

*Tyrone Davis*

TYPED or PRINTED NAME

TYRONE DAVIS

TELEPHONE

312-857-1997

Date: 02/19/03

REGISTRATION NO.  
(if appropriate)  
Docket Number:

34,809

### USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT

This collection of information is required by 37 CFR 1.51. The information is used by the public to file (and by the PTO to process) a provisional application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 8 hours to complete, including gathering, preparing, and submitting the complete provisional application to the PTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Washington, D.C. 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Box Provisional Application, Assistant Commissioner for Patents, Washington, D.C. 20231.

## **DEVICE TO CATCH AND RETRIEVE FOAM PELLETS**

### **CROSS REFERENCE TO RELATED APPLICATIONS**

#### **FIELD OF THE INVENTION**

This invention relates to an apparatus for the cleaning of tubes. More particularly, to an attachment used in the cleaning of tubes using pellets and the retrieval and reuse thereof. Thereby reducing the cost and providing a savings from loss of down time and cost of recovery.

#### **BACKGROUND OF THE INVENTION**

Industry has been looking for ways to clean hydraulic tubing that can replace the current method of vapor degreasing. A vapor degreaser is a large organic solvent still in which the solvent vapor condenses on and drains off the parts to be cleaned. Vapor degreaser systems are large, fixed installations which have a high purchase price and maintenance costs. Companies which use this method must also must obtain a yearly operating permit for there facilities from the Clean Air Agencies because of its potential air pollution and health risks. Replacing these vapor degreasers with a small, low-cost cleaning methods allow installations to consolidate sites and save money.

The pellet system is currently used to clean tubes at a relatively high rate in close quartered work cells. Tubes are bent into a large variety of complicated shapes and lengths. Pellets must be loaded, launched/retrieved and examined with a minimum of operator movement. Equipment which requires the operator to find and fetch the spent pellet lowers productivity. Safety and noise consideration require that the pellets be fired into a containment device and that the noise be reduced to acceptable levels.

One method is to propel a polyurethane foam pellet through the tube using compressed air. The tight fitting foam scrubs the interior wall of the tube as it passes through. This is a widely used technique and there are at least 3 makers of pellets and pellet launching equipment worldwide. One component lacking from the vendors is

equipment to capture and return the spent pellet to the operator so that it may be examined.

This invention provides an innovative, unique and useful attachment to commercially available pellet launchers for tube cleaning. This attachment speeds up the process for retrieval and provides productivity improvements because the pellet method allows the user to go from the current batch-processing method to one-piece processing in work cells.

### **SUMMARY OF THE INVENTION**

The present invention provides an innovative, unique and useful attachment to commercially available foam pellet launchers for tube cleaning. This attachment speeds up the process for retrieval and provides productivity improvements because the pellet method allows the user to go from the current batch-processing method to one-piece processing in work cells. The invention comprises a fitting with a flexible seal opening to receive the (exit) end of the tube being cleaned, a return tube to carry the pellet back to the operator where a receiver captures the pellet, separates it from the air stream and releases it to the operator. The pellet emerging from the cleaned tube enters the transfer tube through a bell shaped fitting. The compressed air flow carries it into the receiver. When air is stopped, the pellet drops out. A straight through muffler at the exit controls noise.

Other features and advantages of the present invention will be apparent from the following description in which the preferred embodiments have been set forth in conjunction with the accompanying drawings.

### **BRIEF DESCRIPTION OF THE DRAWINGS**

The accompanying drawings, which are incorporated in and form part of the specification, illustrate an embodiment of the present invention and together with the description, serve to explain the principles of the invention. In the drawings:

Figure 1 shows the invention;

Figure 2 shows a cut away of the receiver; and

Figure 3 shows another detail of the receiver;

Figure 4 shows a detail of the shuttle in rear position.

Additional advantages and novel features of the invention will be set forth in part in the description which follows, and in part will become apparent to those skilled in the art upon examination of the following or may be learned by practice of the invention. The objects and advantages of the invention may be realized and attained by means of the instrumentalities and combinations particularly pointed out in the appended claims.

### DETAILED DESCRIPTION OF THE INVENTION

This invention is comprised of a fitting with a flexible seal opening to receive the (exit) end of the tube being cleaned, a return tube to carry the pellet back to the operator where a receiver captures the pellet, separates it from the air stream and releases it to the operator. The pellet emerging from the cleaned tube (not shown) enters the transfer tube through a bell shaped fitting. The compressed air flow carries it into the receiver chamber on a path to the chamber wall. The shuttle is in the forward position allowing the pellet to travel up to the screen. As long as air is flowing, the pellet remains inside the chamber and against the screen. When air is stopped, the forces holding the pellet against the screen disappear and the pellet falls out the receiver chamber. A straight through muffler at the exit controls noise.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. An apparatus for the retrieval and inspection of spent pellets used in tube cleaning comprising:
  - a fitting connected to said tube;
  - a seal attached to one end of a transfer tube;
  - a receiver chamber attached to the other end of said transfer tube and a shuttle disposed within said chamber; and
  - a noise inhibiting chamber attached to said collection chamber.
2. A method of retrieving spent cleaning pellets used in a tube cleaning process comprising the steps of:
  - (a) introducing said pellets via a jet stream into one end of said tube;
  - (b) attaching a fitting over the other end of said tube allowing said pellets to pass to a transfer tube;
  - (c) capturing said pellet in a chamber attached to said transfer tube and collecting said pellets; and
  - (d) stopping said jet stream and allowing said pellets to exit said chamber.

## ABSTRACT

An attachment to pellet launchers for tube cleaning. This attachment speeds up the process for retrieval and provides productivity improvements because the pellet method allows the user to go from the current batch-processing method to one-piece processing in work cells. The attachment uses a transfer system uses compressed air that forces foam pellets through a tube and collects the spent pellets.

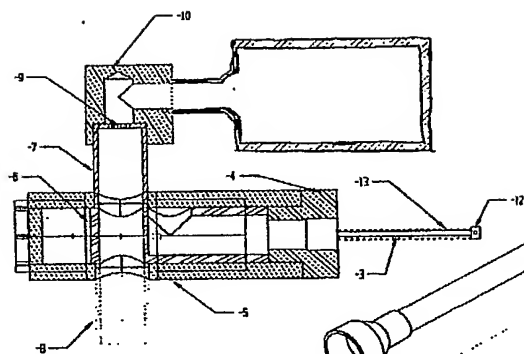


Figure 2

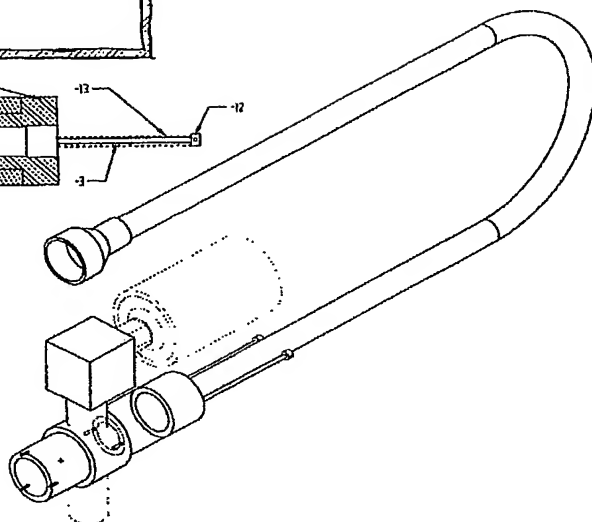
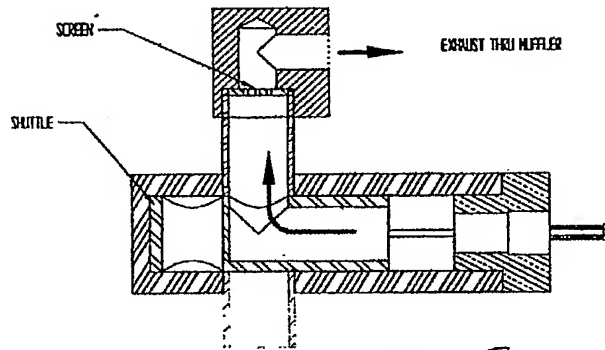


Figure 1

AIR BLAST MOVES SHUTTLE TO FORWARD



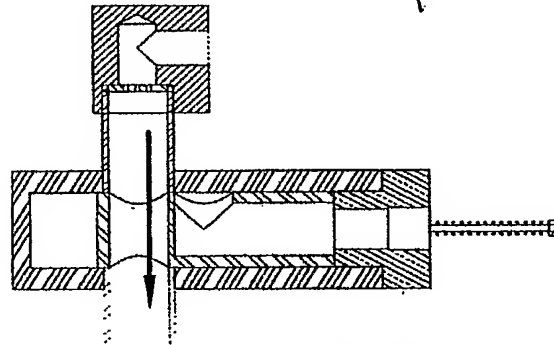
AIR BLAST MOVES SHUTTLE TO FORWARD POSITION

PELLET GOES UP THE AIR EXHAUST.

PELLET IS HELD AGAINST SCREEN WHILE AIR IS ON.

SECTION A-A

Figure 3



WHEN AIR IS TURNED OFF, SHUTTLE MOVES TO REAR POSITION.

PELLET FALLS THROUGH PASSAGE AND OUT THE PORT.

SECTION A-A

Figure 4